

WHAT IS CLAIMED IS:

1                   1.     A method for producing porous Group III-V material, the  
2 method comprising steps of:

3                    depositing a thin discontinuous layer of metal on a Group III-V  
4 material surface;

5                    etching the Group III-V material surface in a HF and oxidant  
6 solution, said etching being conducted without external electrical bias.

1                   2.     The method according to claim 1, wherein said step of  
2 etching is conducted in the absence of illumination.

1                   3.     The method according to claim 1, wherein said step of  
2 etching is conducted in the presence of illumination.

1                   4.     The method according to claim 1, wherein said metal  
2 comprises Pt.

1                   5.     The method according to claim 1, wherein said metal  
2 comprises Au.

1                   6.     The method according to claim 1, wherein said metal  
2 comprises Pd.

1                   7.     The method according to claim 1, wherein said metal  
2 comprises a combination of metals selected from the group of Au, Pt and Pd.

1                   8.     The method according to claim 1, wherein said oxidant  
2 comprises H<sub>2</sub>O<sub>2</sub>.

1                   9.     The method according to claim 1, wherein the thickness of  
2 said metal is less than approximately 10nm.

1                   10.    The method according to claim 1, wherein said etching is  
2 conducted for a time period between about 2 seconds and one hour.

1                   11.    The method according to claim 1, wherein said Group III-V  
2 material comprises GaN.

1 12. A method for producing porous Group III-V material, the  
2 method consisting of the following steps:

3 depositing a thin discontinuous layer of metal on a Group III-V  
4 material surface;

5 etching the Group III-V material surface in a HF and oxidant  
6 solution for a period of about two seconds up to 60 minutes.

1 13. The method according to claim 12, wherein said step of  
2 etching is conducted in the absence of illumination.

1 14. The method according to claim 12, wherein said step of  
2 etching is conducted in the presence of illumination.

1 15. The method according to claim 12, wherein said metal  
2 comprises Pt.

1 16. The method according to claim 12, wherein said metal  
2 comprises Au.

1 17. The method according to claim 12, wherein said metal  
2 comprises Pd.

1 18. The method according to claim 12, wherein said metal  
2 comprises a combination of metals selected from the group of Au, Pt and Pd.

1 19. The method according to claim 12, wherein said oxidant  
2 comprises H<sub>2</sub>O<sub>2</sub>.

1 20. The method according to claim 12, wherein the thickness of  
2 said metal is less than approximately 10nm.

1 21. The method according to claim 12, wherein said etching is  
2 conducted for a time period between about 2 seconds and one hour.

1 22. The method according to claim 12, wherein said Group III-V  
2 material comprises GaN.

1 23. A method for producing porous Group III-V material, the  
2 method comprising steps of:

